

## Assignment - 2

```
// ArrayAndArrayList.java
package Assign1;

import java.io.IOException;
import java.util.*;

public class ArrayAndArrayList {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Prompt the user to enter the size of the array
        System.out.println("Enter the size of array: ");

        // Read the size from user input
        int size = sc.nextInt();

        // Get the primitive double array from user input using UserInput
class
        double[] array = UserInput.inputArray(size);

        // Close the Scanner to avoid resource leaks
        sc.close();

        // Print the primitive double array using Arrays.toString
        System.out.println(Arrays.toString(array));

        // Convert the primitive double array to an ArrayList<Double>
        List<Double> arrlist =
Arrays.asList(Arrays.stream(array).boxed().toArray(Double[]::new));

        // Print the elements of the ArrayList using a for-each loop
        for (Double element : arrlist) {
            System.out.println(element);
        }
    }
}
```

**Output:**

```
Enter the size of array:
4
Enter the array elements separated by spaces:
9 5 8 3
[9.0, 5.0, 8.0, 3.0]
9.0
5.0
8.0
3.0
```

**Neighbours**

```
// Neighbours.java
package Assign1;

import java.io.IOException;
import java.util.Scanner;

public class Neighbours {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Prompt the user to enter the size of the array
        System.out.println("Enter the size of the array: ");

        // Read the size of the array from user input
        int size = sc.nextInt();

        // Get the array input from the user using the UserInput class
        double[] array = UserInput.inputArray(size);
        sc.close();

        // Find and print the index of the nearest neighbours in the array
        System.out.println("Index of Nearest Neighbours: " +
            findNearestNeighbours(array));
    }

    // Method to find the index of nearest neighbours in the array
    public static int findNearestNeighbours(double[] arr) {
        double minDistance = Double.MAX_VALUE;
        int index = -1;
    }
}
```

```
// Iterate through the array and calculate distances between adjacent
elements
for (int i = 0; i < arr.length - 1; i++) {
    double distance = Math.abs(arr[i] - arr[i + 1]);

    // Update the index if the current distance is smaller than the
minimum distance
    if (distance < minDistance) {
        minDistance = distance;
        index = i;
    }
}

// Return the index of the nearest neighbours
return index;
}
```

### Output:

```
Enter the size of the array:
4
Enter the array elements separated by spaces:
1 9 8 3
Index of Nearest Neighbours: 1
```

### Odd and Even

```
// OddEven.java
package Assign1;

import java.io.IOException;
import java.util.Arrays;
import java.util.Scanner;

public class OddEven {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Declare arrays for even and odd numbers
        double[] even;
        int j = 0;
```

```
int k = 0;
double[] odd;

// Prompt the user to enter the number of elements
System.out.println("Enter the number of elements to enter:");

// Read the size from user input
int size = sc.nextInt();

// Initialize arrays for even and odd numbers based on the user-
defined size
even = new double[size];
odd = new double[size];

// Get the array input from the user using the UserInput class
double[] array = UserInput.inputArray(size);

// Close the Scanner to avoid resource leaks
sc.close();

// Separate even and odd numbers into their respective arrays
for (int i = 0; i < size; i++) {
    if (array[i] % 2 == 0) {
        even[j] = array[i];
        j++;
    } else {
        odd[k] = array[i];
        k++;
    }
}

// Print even elements
System.out.println("Even elements:");
System.out.println(Arrays.toString(even));

// Print odd elements
System.out.println("Odd elements:");
System.out.print(Arrays.toString(odd));
}

// Method to print elements of an array
public static void print(double[] array, int size) {
    for (int i = 0; i < size; i++) {
        System.out.println(array[i]);
    }
}
}
```

**Output:**

```
Enter the number of elements to enter:
Enter the array elements separated by spaces:
3 5 7 9 4
Even elements:
4.0, 0.0, 0.0, 0.0, 0.0, 0.0]
Odd elements:
1.0, 3.0, 5.0, 7.0, 9.0, 0.0]
```

**Userinput**

```
// UserInput.java
package Assign1;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;

public class UserInput {
    // Method to get an array input from the user
    public static double[] inputArray(int size) throws IOException {
        // Create a BufferedReader to read user input
        BufferedReader br = new BufferedReader(new
        InputStreamReader(System.in));

        // Prompt the user to enter the array elements
        System.out.println("Enter the array elements separated by spaces: ");

        // Read the array input as a string
        String array = br.readLine();

        // Initialize an array to store the input elements
        double[] arrayInput = new double[size];

        // Split the input string and convert each element to double
        String[] input = array.trim().split("\\s+");

        // Populate the array with the converted elements
        for (int i = 0; i < size; i++) {
            arrayInput[i] = Double.parseDouble(input[i]);
        }
    }
}
```

```
    }  
  
    // Return the array containing user-input elements  
    return arrayInput;  
}  
}
```

Github link: <https://github.com/Jayaditya177>